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The Relationships between Child Temperament, Teacher-Child Relationships, and Teacher-Child Interactions

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Abstract

The purpose of the study was to examine the relationships between child temperament, teacher-child relationships, and teacher-child interactions in four preschool classrooms. The preliminary analyses revealed classroom differences for all variables. In all the classrooms except one, the temperament factor Reactivity had positive and high correlations with Conflict in the relationship. Task Orientation was positively correlated to the Closeness subscale in three of the classrooms. In two of the classrooms, Task Orientation was negatively correlated with the Conflict subscale. Behavior Management was the only teacher interaction behavior that was somewhat related to temperament in all of the classrooms. Although the effect of temperament on each teacher was different, the results suggest that teachers' relationships and interactions with children are affected by child temperament; however, there might be other factors affecting the relationships, such as teacher temperament. The results and suggestions are discussed further in the article.

Keywords: Child temperament, Teacher-child relationships, Teacher-child interactions, Early childhood education

1. Introduction

It is believed that young children's experiences during the critical years (0-6) can have a considerable effect on children's developmental outcomes. Children's relationships with adults are a critical resource for children's social, emotional, and cognitive development, as well as their academic achievement in the preschool, elementary, and middle-school years (Burchinal et al., 2002; Birch & Ladd, 1997; Clifford et al., 1998; Pianta, 1999; Pianta & Walsh, 1996; Wentzel, 1998). Teachers are one of the most important adults in young children's lives since many preschoolers spend the majority of their weekdays in an early childhood program. In this regard, relationships with teachers are a crucial part of children's daily classroom experiences as well as a potential resource for enhancing developmental outcomes (Pianta, 1999). Teacher-child relationships can enhance children's development and support their learning experiences by providing children with social support and emotional security. Furthermore, when young children have close relationships with their teachers, they are better able to listen, concentrate, and learn. On the other hand, detached or conflicted relationships can impede children's motivation and learning (Pianta, 1999). Moreover, a preschool child's secure attachment relationship with his or her preschool teacher may partially compensate for an insecure relationship with his or her mother (Mitchell-Copeland, Denham, & DeMulder, 1997).

Evidence reveals that the quality of teacher-child relationships is related to young children's emotional, social, and language development, aggressive behavior, and school adjustment (e.g., Birch & Ladd, 1997; Burchinal, et al., 2002; Hamre & Pianta 2001; Howes, 1997; Howes, Hamilton, & Matheson, 1994; Pianta & Steinberg, 1992; Mitchell-Copeland, Denham, & DeMulder, 1997). Children with more positive teacher-child relationships appear more able to make the most of the learning opportunities available in classrooms (Howes & Smith, 1995), adjust to the demands of formal schooling (Birch & Ladd, 1997; Lynch & Cicchetti, 1997; Pianta & Steinberg, 1992), develop better relationships with peers (Howes, Hamilton, & Matheson, 1994), and have fewer problem behaviors (Clifford, et al., 1998). Results from a longitudinal research study indicated that when young children's primary child-care teacher changed, if the change was from insecure to secure relationship, children's aggression with peers decreased (Howes &

Hamilton, 1993). On the contrary, conflict in the teacher-child relationship was found to be related to a decrease in children's prosocial behavior and an increase in peer-perceived aggressive behavior one year later (Birch & Ladd, 1998). These results suggest that warm teacher-child relationships can increase children's prosocial behaviors and decrease aggressive behavior, whereas conflictual teacher-child relationship can do the opposite. Teacher-child relationships also predicted academic engagement, which predicted academic achievement, kindergarten through third grade. Moreover, analyses of developmental trajectories revealed that changes in relationship quality from one year to the next predicted parallel patterns of change in academic engagement (Valeski, 2000). Therefore, poor or conflictual relationships with adults can be a source of risk for children and interfere with social-emotional development, school adjustment, children's ability to learn, academic engagement, and academic success.

Another crucial factor affecting children's developmental outcomes is teacher-child interaction. In view of the fact that young children learn basic skills and knowledge (e.g., language, social competence) through interactive experiences, the nature and frequency of teacher-child interactions contributes significantly to children's development (Bowman, Donovan, & Burns, 2001; Kontos & Wilcox-Herzog, 2002). Teachers are the most capable social partners in early childhood classrooms who can scaffold young children's learning and social interaction. Research findings show that frequent verbally stimulating teacher-child interactions, specifically interactions which expand children's ideas and conversations by asking open-ended and cognitively challenging questions, giving information, encouraging, and helping children elaborate on their activities facilitate the language, cognitive, and social development of children (Dunn, 1993, McCartney, 1984; 2002; NICHD, 2000; NICHD, 2003; Smith, 1996; Trawick-Smith, 1994). Furthermore, teacher-child interaction which elaborate children's ideas and conversations, or which includes 'rare' vocabulary is related to children's later development of vocabulary, story understanding, print skills, and the ability to produce extended discourse (Smith, 1996). Also, follow-in directives (following the child's lead) were found to be positively correlated to children's language development, while redirectives (initiating a new topic) were negatively correlated (McCathren, Yoder, & Warren, 1995). As well, teachers' restrictive, controlling interactions were found to be negatively related to children's language development (McCartney, 1984).

The above-mentioned research results suggest that teachers' relationships and interactions with children are of considerable importance. Depending on their nature, teachers' relationships and interactions with children can enhance or hinder children's development. Teachers' differential relationships and interactions with the children in their classrooms are influenced partly by child characteristics. Child temperament has been found to be a significant factor affecting some components of teacher-child interactions and teacher-child relationships by some studies (Flynn, 2000; Keogh, Pullis, & Cadwell, 1982; Thomas & Chess, 1977).

The purpose of this study was to further investigate the relationships between child temperament, teacher's perceptions of teacher-child relationships and teacher interaction behaviors toward individual children.

There are many theoretical perspectives regarding temperament; however, researchers (Buss & Plomin, 1984; Thomas & Chess, 1977; Rothbart & Derryberry, 1981) generally agree on the following definition of temperament: Temperament is a general term referring to "intrinsic tendencies to act or react in specific and predictable ways to stimuli, people, and events" (Teglasi, 1998, p. 475). It is also believed that temperament characteristics are biologically rooted, become apparent early in life, and are relatively stable across various kinds of situation and over time (Bates, 1987; Buss and Plomin, 1984; Carey and McDevitt, 1978; Goldsmith et al., 1987; Kohnstamm, 1986; Thomas and Chess, 1977).

Stella Chess and Alexander Thomas are considered as pioneers of temperament research in childhood (Anderson-Goetz, Worobey, 1984; Bates, 1989; Bates, 2001; Guerin et al, 2003; Rothbart & Jones, 1998). These two researchers and their colleagues conducted the New York Longitudinal Study (NYLS), which stimulated the current research on temperament in the United States. In 1959, they found that the child is an active agent in his or her own development. Child-caregiver interaction is not a one-sided process. The child plays a highly active part in the interaction process by his or her temperamental traits (Thomas, Chess, Birch, 1968, p. 4).

The fundamental principle of this approach is the concept of "goodness of fit" (Thomas et al., 1968). According to Thomas et al. (1968), the child's optimal development will be achieved if the environment and expectations within the environment are in agreement with the child's capacity and temperament. If there is a 'goodness of fit' between the adults' attitudes and practices and the child's capacity and temperament to master these demands, development will proceed smoothly, and foundation of a healthy personality will be established. If the child's characteristics and environmental demands are incompatible, the child cannot cope with these demands and becomes excessively stressed, and as a result, unhealthy personality basis will be established for the child (Thomas & Chess, 1977). The problems related to "lack of fit" between the child's temperament and parenting strategies can be reduced by adjusting parenting strategies suitably to a child's temperament (Thomas, Chess and Birch, 1968).

Some temperament characteristics can be a risk factor for developing behavioral problems. These characteristics, which include high negative reactivity, high activity level, low approach, and low task persistence, have been related to

behavioral problems. On the contrary, low activity level, high approach, and high task persistence have been related to positive self-perception (Klein, 1992). However, the involvement of effective and caring adults enhances the flexibility of children and reduces the probability of their developing serious behavioral disorders (Werner & Smith, 1992). In addition to the goodness of fit between parents and children, goodness of fit between teachers and children in their classrooms can also be an important factor affecting children's developmental outcomes. Chess (1966 as cited in Pullis & Cadwell, 1982) found that when teachers changed their reactions to the problem behaviors of temperamentally difficult children, adaptation of the children improved. Therefore, teachers may need to use different intervention strategies for children depending on their temperamental characteristics.

Research results indicate that child temperament affects some aspects of teacher-child interaction. Child temperament has been shown to affect teacher expectations (Keogh, Pullis & Cadwell, 1982; Thomas & Chess, 1977); the amount of the time teachers spend with children; teachers' monitoring decisions; and the frequency of teachers' praise, criticism, instruction, physical contact, and directive behaviors (Nelson, 1987, Pullis & Cadwell, 1982). However, although research clarified the effects of verbally stimulating teacher-child interaction on child outcomes in preschool years, how child characteristics affect verbally stimulating teacher-child interaction remains unexplored.

Only one study (Flynn, 2000) has investigated directly the relationship between temperament and teacher-child relationships. The participants of the study were developmentally disabled preschool children and their teachers. Positive relationships were found between closeness of teacher-child relationship and the Task Orientation, Personal/Social Flexibility dimensions of temperament. Martin, Nagle, and Paget (1983) have investigated the relations between temperament and teacher attitudes toward first graders. Teacher attitudes toward children were measured with Silberman's (1969) procedure. Although this procedure does not directly measure teacher-child relationships, it has similar groups: attachment, concern, rejection, and indifference. Attachment group is parallel to close teacher-child relationships, and rejection group is parallel to conflictual relationships. The findings are in agreement with Flynn (2000). The attachment group was more adaptable, more approaching, and more persistent. The rejection group was more active and distractible. The indifference group was less active, less approaching, and less intense. Martin, Nagle, and Paget (1983) described children in the indifference group as shy and passive. The indifference group received fewer teacher contacts than their peers (Silberman, 1969 as cited in Martin, Nagle, & Paget, 1983). Briefly, the findings of these two studies suggest that teachers have closer relationships with more adaptable, more approaching, and more persistent children, and they have more conflictual relationships with children who are more active, more distractible, and less persistent. To date, there is no research investigating the relation between temperament and teachers' relationship with typical children. Research investigating teacher-child relationships with typical children was needed for generalizability of the research by Flynn (2000). In light of the gaps in the research, this study was designed to examine the relationships between child temperament, teacher-child relationships and teacher-child interaction.

2. Methodology

The purpose of the study was to investigate the relationships between child temperament, teacher-child relationships and teacher-child interaction. The directors and teachers of the private preschools located in Tallahassee were contacted to obtain permission to conduct research with their preschool children. Among the preschools whose directors and teachers agree to participate in the study, four of the preschools with high rate of parental permission were selected to participate in the study. Children's temperament and teacher-child relationships were assessed by teacher ratings. Teacher interactions toward individual children were measured using natural observations. The data were analyzed by conducting Analysis of Variance (ANOVA) and Pearson Product Moment Correlations.

2.1 Research Questions

1) Are there relationships between child temperament factors (task orientation, reactivity, social adaptability) and teacher-child relationships (closeness, conflict, dependency, overall quality)?

2) Are there relationships between child temperament factors (task orientation, reactivity, social adaptability) and teachers' interactions with children?

2.2 Participants

The sample consisted of 61 (29 boys and 32 girls) 4- to 5-year-old children who attended one of the four classrooms, which participated in the study. The Classroom 1 was part of a housing complex preschool of a university in the southeast of the USA and the Classroom 2 was part of a laboratory preschool of the same university. The university preschools were ethnically diverse (e.g., Hispanic, Chinese, Turkish, Arabic, African, African American, and Anglo). At least one of the parents was a graduate student. The Classroom 3 was part of a church preschool. The Classroom 4 was part of a private elementary school in the same city. In the Classroom 3 and Classroom 4, with the exception of one Chinese, two Hispanic, and one Polish, the children were Anglo. Family backgrounds were middle to upper middle class. All children in each classroom participated in the study, except one child whose parents did not give permission to participate in the study. There were 18 children in the Classroom 1; 16 children in the Classroom 2; 13 children in the

Classroom 3; and 14 children in the Classroom 4. Four children from the Classroom 1, 1 child from the Classroom 2, 1 child from the Classroom 3, and 1 child from the Classroom 4 were dropped from the analyses of teacher-child interactions because of absenteeism more than 3 times during the observations. However, they were included in the analyses of teacher-child relationships and temperament.

2.3 Measures

2.3.1 Children's temperament

Children's temperament was measured by teacher ratings. The short form of Thomas and Chess' (1977) Teacher Temperament Questionnaire revised by Keogh (1982) was used. Keogh used 8 dimensions of temperament: activity level, distractibility, attention span/persistence, approach/withdrawal, adaptability, intensity of reaction, threshold of responsiveness, and quality of mood. Researchers (Keogh, 1982; Pullis & Cadwell; 1982; and Martin, Nagle, & Paget, 1983) extracted three common factors through factor analysis of teacher ratings of temperament. These factors are: Task Orientation, Personal-Social Flexibility, and Reactivity.

- *Task Orientation (Task Attention)* is composed of activity level, persistence, and distractibility. Task Orientation indicates a child's ability to be seated during a task and to persist on the task until completion without being distracted.
- *Personal-Social Flexibility (Social Adaptability)* includes items from the dimensions of withdrawal/approach, adaptability, and positive mood. Social Adaptability is about children's tendency to react positively to new situations or stimuli and to modify behaviors easily in the desired direction, and to have positive attitudes during social interactions.
- *Reactivity* contains items from the dimensions of intensity, and threshold of response, and negative mood. When frustrated, children with high Reactivity have a tendency to overact and become overly upset.

Pullis (1979 as cited in Keogh, Pullis, & Cadwell, 1982) examined the psychometric properties of the scale and found that the verified factor structure of the short form was consistent with the factor structure of the original TTQ. Internal consistencies for the factors were tested. Alpha coefficients for the factors were: (Task Orientation) .94, (Personal-Social Flexibility) .88, and (Reactivity) .62.

2.3.2 Teacher-child relationship

Teachers' perceptions of teacher-child relationship were measured using the Student-Teacher Relationship Scale (STRS) developed by Pianta (1999). The STRS measures three aspects of the relationship: (1) teacher's perceptions of his or her relationship with a particular student, (2) "a student's interactive behaviors with the teacher," (3) "a teacher's beliefs about the student's feelings toward the teacher" (Pianta, 2001, p.1). The STRS has one total scale and three subscales: Conflict, Closeness, and Dependency. Test-retest reliability estimates of the STRS are: Closeness, .88; Conflict, .92; Dependency, .76; Total, .89. Internal consistency reliability estimates for the total normative sample are: Conflict, .92; Closeness, .86; Dependency, .64; Total, 89.

2.3.3 Teacher-child interactions

Teacher interactions toward individual children were measured using natural observations during indoor free play/centers time as teachers and children carried out their normal classroom activities. Free play periods were chosen to conduct the observations, because the unstructured nature of the free play setting allows teachers more freedom in their location and behavior in the classroom. Furthermore, in preschool classrooms, one-to-one interactions most frequently occur during free play. The researcher observed each classroom for eight 50-minute segments during indoor free play/centers time. The observations were completed in 7 weeks during the Spring 2006 Semester.

The teacher-child interactions were observed in terms of how the teachers interacted with individual children in their classrooms. Each instance of one-to-one teacher interaction received by a child was observed and coded. There were two levels of coding. The first level of coding consists of coding the teacher's interaction into one of the 10 main teacher interaction categories. These are: Introduces, Elaborates, Restates, Open-ended Questions, Closed-ended Question, Praise, Directives, Responds, Minimally Responds, and Ignores. The interactions, which did not fit into any of the categories, were coded as "Others".

The second level of coding represented the initiation of the interaction. It consists of three categories: behavior management, child-initiated, and teacher-initiated. (a) Behavior management: The teacher interaction is in response to a misbehavior of a child, such as not following the classroom rules or aggressiveness (e.g., hitting another child, destroying someone's building, taking someone's toy, running in the classroom, not putting the toys where they belong). (b) Child-initiated: The teacher interaction behavior is in response to a child's initiation. (c) Teacher-initiated: The interaction is initiated by the teacher. The observers coded first the nature of the interaction and then the initiation of the interaction. For example, if a child came and showed her drawing to the teacher and the teacher said "That's beautiful", then the observer coded as "Pe Ci" ("Pe" for praise/encouragement and "Ci" for child initiated).

Some of the teacher interaction variables were grouped together during the analysis to create new variables that were of

interest to the research. The computed variables are: Total Interaction, Total Child-initiated Interaction, Total Teacher-initiated Interaction, Total Behavior Management, Total Elaborates, Total Open-ended Questions, Total Closed-ended Questions, Total Praise, and Total Directives.

Reliability of the observational measure was estimated by interrater reliability. Although, the majority of the observations were conducted by the first author, for reliability purposes a second observer was trained. Prior to the collection of the data, the additional observer was trained until acceptable agreement (90%) with the author was achieved. Twelve and a half percent of the observations were conducted by both observers in order to establish interrater reliability at the first and fourth week of the observations. The interobserver reliabilities for each classroom were %88, %91, %91, and %86.

3. Results

Firstly, Analysis of Variance (ANOVA) was conducted for the temperament dimensions and factors, teacher-child relationship subscales, and teacher interaction behaviors to compare the four classrooms in each variable. The ANOVA results revealed classroom differences for temperament, teacher-child relationships, and teacher-child interactions. Teacher ratings of child temperament revealed that the Classroom 2 had the highest means in activity, persistence, distractibility, approach/withdrawal, adaptability, and mood. Also, it had the lowest means in threshold and intensity, which make up the Reactivity factor. Therefore, either the children in the Classroom 2 are less active, more persistent, less distractible, high in approachability, have more positive moods, and less reactive than the children in the other classrooms, or the teacher has a tendency to perceive or report more positively than the other teachers. The teacher in the Classroom 2 also perceived her relationship with children in her classroom closer and less conflictual than the other 3 teachers. She was observed to be more affectionate and involved with the children than the other teachers. Also, the structural quality of the Classroom 2 was better than the other classrooms, and the teacher was observed to be more confident in content matters as well as interacting and supporting children's play. The teacher in the Classroom 4 perceived her relationships less close and more negatively than the other teachers. This teacher was also observed to be less affectionate with the children in her classroom than the other teachers.

Briefly, teachers differed in regard to the quality of their relationships with the children in their classroom, as well as the interaction styles they used with the children. Since the classrooms differed from each other in each of the variables, the data for the classrooms could not be combined. The number of participants in each classroom was not enough to conduct Multiple Regression Analyses as planned previously; therefore, the data were only analyzed by conducting Pearson Product Moment Correlations. The results are discussed below in terms of each of the research questions separately for each classroom.

3.1 Question 1. The Relationships between Teacher-Child Relationship Subscales and Temperament Factors

Classroom 1: The Overall Quality of the Relationship was significantly correlated with Task Orientation and Personal/Social Flexibility positively and Reactivity negatively. Closeness of the teacher-child relationship was also related to Task Orientation and Personal/Social Flexibility positively. Conflict in the relationship was associated with Reactivity. Dependency was only significantly correlated with Personal/Social Flexibility negatively. Results are presented in Table 1.

Classroom 2: In the Classroom 2, there was only significant relationship between Closeness of the Relationship and Task Orientation. Personal/Social Flexibility was not related to teacher-child relationship. Although it was not significant Reactivity seemed to negatively affect the teacher-child relationship. Table 2 presents the results.

Classroom 3: The Overall Quality of the Relationship was related to Task Orientation positively and Reactivity negatively. Closeness of the Relationship was associated with Task Orientation. Conflict in the relationship was correlated to Task Orientation negatively and Reactivity positively. An unexpected result was that Dependency was positively correlated with Task Orientation. Table 3 presents the results.

Classroom 4: The Overall Quality of the Relationship was associated with Task Orientation positively and Reactivity negatively. Closeness was only related to Personal/Social Flexibility but it was not significant. Conflict in the relationship was correlated with Task Orientation negatively and Reactivity positively. Dependency was not significantly related to any of the teacher-child relationship subscales. Results are presented in Table 4.

3.2 Question 2. Correlations between Temperament and Teacher-Child Interactions

The relationship between child temperament and teachers' interactions with children differed among teachers. Behavior Management was the only teacher interaction behavior which was related to temperament in all classrooms. The temperament factor Task Orientation was moderately and significantly correlated to Behavior management in the Classroom 1 ($r = -.500$, $p < .05$), the Classroom 3 ($r = -.590$, $p < .05$), and the Classroom 4 ($r = -.783$, $p < .01$). Although it was not significant in the Classroom 2, the relationship between Behavior Management and Task Orientation ($r = -.434$) was in the same direction with the other classrooms. The temperament factor Reactivity was also related to Behavior

Management in the Classroom 3 (r = .630, p <.05) and the Classroom 4 (r = .601, p <.05). Only in the Classroom 1, the temperament factor Adaptability was negatively related to Behavior Management (r = -.505, p < .05).

There were few correlations between the temperament factors and the other teacher interaction behaviors. The teacher in the Classroom 1 had more Elaborative interactions with children who had higher scores on Task Orientation (r = .699, p < .01) and Social Adaptability (r = .564, p < .05). The teacher in the Classroom 2 initiated more interactions with children who were more reactive (r = .511, p < .05). On the other hand, she asked more open-ended questions to children with high adaptability (r = .527, p < .05). In the Classroom 3, the temperament factors were not related to any of the teacher interaction behaviors other than behavior management. Temperament was an important variable at the teacher's interactions with children in the Classroom 4. The temperament factor Reactivity was positively related to Total Interactions (r = .675, p < .05), Child Initiated Interactions (r = .598, p < .05), and Elaborates (r = .559, p < .05). The temperament factor Task Orientation was negatively related to Total interactions (r = -.531, p < .05). The temperament factor Social Adaptability was positively related to Child Initiated Interactions (r = .537, p < .05) and Praise(r = .680, p < .05). Results are presented in Table 5, 6, 7, and 8.

4. Discussion

4.1 Teacher-child relationships

As can be seen in the results, the effect of temperament on teacher-child relationship varied somewhat among teachers. Particularly, the teacher's perceptions of her relationship with the children in her classroom were only slightly associated to children's temperament in the Classroom 2. In the Classroom 2, only Task Orientation factor had significant relationship with Closeness of the relationship. For the remaining 3 teachers, the temperament factors were moderately and sometimes strongly related to teachers' perception of the teacher-child relationship subscales; however, there were still variations among the three teachers. Below, a brief overview and discussion of the findings are presented separately for each temperament factor.

In all the classrooms except the Classroom 2, the temperament factor Reactivity had positive and high correlations with Conflict in the relationship; however, it was not significantly correlated with Closeness of the relationship. This finding is important in that these teachers did not perceive their relationships less close with highly reactive children than less reactive children. The findings of a research, by Flynn (2000), examining the relationship between the children with developmental disabilities and their teachers are in line with this finding. Flynn also found that conflict in the relationship was related to reactivity.

Task Orientation was significantly correlated to the Closeness subscale in the first, second, and third classroom. These teachers perceived their relationship closer with children who could sit during a task and persist on task until completion without being distracted. Besides, in the Classroom 3 and the Classroom 4, Task Orientation was negatively correlated with the Conflict subscale, indicating teachers perceived their relationship more conflictual with children who were more active, less persistent on a given task, and who got easily distracted. This finding is consistent with the past research by Martin et al. (1983), who asked teachers if they could reduce their class size by three children, who they would pick. This group of children named the "rejection group" was more active and distractible than the other children. Also Flynn (2000) found that conflictual relationship was negatively related to Task Orientation.

Personal/Social Flexibility significantly affected the teacher-child relationship only in the Classroom 1. Children in this classroom who were high on Personal/Social Flexibility had higher scores on the Overall Quality of the Relationship and lower scores on the Dependency subscale. For the teacher in this classroom, all three temperament factors were considerable factors affecting her perceptions of teacher-child relationships in her classroom. These findings are somewhat consistent with past research by Keogh (1982), who asked teachers to identify those temperament characteristics that they valued in students. The teachers described "teachable" students as those who were high in Task Orientation and Adaptability and low in Reactivity. However, the findings of this study indicated that the effect of temperament differs from teacher to teacher. For example, Adaptability was only important for one of the teacher's relationships with the children in her classroom. Also, for the relationships between teacher-child interactions and temperament, there were variations among teachers suggesting the importance of teacher characteristics in these relationships. The possible effects of teacher characteristics are discussed further under teacher-child interactions.

4.2 Teacher-child interactions

Although there were high correlations between child temperament and teacher-child relationship subscales, significant correlations between child temperament and teacher-child interactions were fewer than expected. This suggests that although teachers' relationships are affected by child temperament, to some extent they were not allowing their negative emotions towards temperamentally difficult children to control their interactions. However, there were still some relationships between child temperament and teachers' interactions with children with a variation among teachers. This means that to some extent, teachers' interactions with children are affected by child temperament, but each teacher was affected by child temperament differently.

Behavior Management was the only teacher interaction behavior that was somewhat related to temperament in all of the classrooms. Task orientation was the common temperament factor, which was related to behavior management in all of the classrooms. In all classrooms, children who are more active, easily distractible, and less persistent received more behavior management interactions from their teachers. Children who are able to sit during a task, persist on task until completion without being distracted received less behavior management interactions. The reason of this finding can be the children with low task orientation (more active, more distractible, and less persistent children) may have more off task behavior and more misbehavior resulting in more disciplining by the teachers. This finding is consistent with research by Pullis and Cadwell (1982), which revealed that task orientation was the most important factor in classroom management rated by teachers; and by Paget et al. (1984) which found that the most attentive first grade children were the least likely to receive behavior contact.

Behavior Management was negatively related to the temperament factor Social Adaptability in the Classroom 1. This finding is not in agreement with the previous research. Pullis and Cadwell (1982) for instance found that while Adaptability was not related to first and third grade teachers' monitoring decisions, it was positively related to kindergarten teachers' monitoring decisions, in situations involving children interacting in groups (Group Activity, Nonacademic Transition, and Free play). Pullis and Cadwell (1982) suggest that since adaptability is related to social interaction skills, some highly adaptable children can be too sensitive to social demands and may not be goal oriented within group situations. The inconsistency between the findings in this study and that of previous research can be explained with other factors affecting the relationship between behavior management and adaptability, such as classroom structure, teacher temperament, and teacher's beliefs about how an ideal child should be.

Also, in the Classroom 3 and the Classroom 4, Reactivity had moderate correlations with Behavior Management; which means, children who have a tendency to overact to stressful situations and become overly upset when frustrated received more behavior management interactions from their teachers. However, this was not the case for the other two classrooms. This difference may be due to the structure of the classroom, the other characteristics of the children, or the unsuitability of teacher characteristics and child temperament. However, in the Classroom 4, the reason for the difference may not lie with the teacher's characteristics, because she also had positive interactions with more reactive children. Also, the relationship between reactivity and closeness of the relationship was almost zero (r=-.033). Therefore, the reason for the difference in findings between the classrooms may be related to classroom structure or the other characteristics of the more reactive children in this classroom affecting their behaviors. Nonetheless, in the Classroom 3, although the finding was not significant, Reactivity and closeness of the relationship was negatively related (r= -.447). The reason for this can be that the teacher in the Classroom 3 may not have known how to handle children with high reactivity or she might have had a low tolerance to reactivity; resulting in a higher level of problems and conflict between the teacher and the reactive children.

Other teacher interaction categories are discussed separately for each teacher. For the teacher in the Classroom 1, Task Orientation and Personal/Social Flexibility were significant temperament factors affecting Elaborative and Behavior Management Interactions. This teacher had less elaborative interactions with children who were more active, less persistent, easily distractible, and had shorter attention spans. Also, she had less elaborative interactions with children who were less socially adaptable. As a result, these children might not have been receiving enough elaborations to expand their learning experiences. Even tough, this was not the case for the other classrooms; it is still an important finding considering the possible effects of teachers' elaboration on children's language and cognitive development and academic success.

Social adaptability also affected the teacher's interactions with children in the Classroom 2. She asked more open-ended questions to children who were more socially adaptable, so less adaptable children were receiving less open-ended questions. An interesting finding was that she initiated more interaction with more reactive children. This teacher might have been interacting more with reactive children to reduce their stress and probability of overacting. For the teacher in the Classroom 3, temperament was only important at Behavior Management which was discussed above.

For the teacher in the Classroom 4, reactivity was the most important temperament factor affecting her interactions with the children in her classroom. Although she had more behavior management interactions with more reactive children, she unexpectedly had more interactions and elaborative interactions with them also. This finding is also consistent with the results of the first research question. Although this teacher perceived her relationship with more reactive children as conflictual, the correlation between Reactivity and Closeness of the relationship was almost zero (r = -.033). The conflict may have been the result of the problem behaviors of the reactive children. In spite of the conflict in the relationship, the results suggest that this teacher neither had less close relationships nor less positive interactions with more reactive children. On the contrary, she had more positive interactions with more reactive children. We can say that this teacher was good at dealing with reactive children and not letting the conflict get in her way to build a good relationship with them. On the other hand, she may not have been giving enough attention to children who were less reactive.

Another important finding for the Classroom 4 was that the temperament factor Task Orientation, which consists of activity, persistence, and distractibility, was negatively correlated with total interactions. This finding contradicts with the findings of the research by Keogh and Burstein (1988), which revealed that the frequency of teacher-student interactions was positively related to task orientation. Moreover, although it was not significant, task orientation was negatively correlated with all the interaction categories. More persistent children received less interaction, elaboratives, and directives. In this classroom, the children who had more positive temperamental characteristics seemed to be somewhat ignored by the teacher.

Although the effect of temperament on each teacher was different, the results suggest that teachers' relationships and interactions with children are affected by child temperament. Teachers may not have detailed knowledge of child temperament; however, they are aware of the temperamental characteristics of children in their classrooms, and furthermore, affected by these characteristics without even realizing their differential treatment to the children depending on their temperament. Nevertheless, there are other factors affecting the relationship between child temperament and teacher-child relationships and teacher-child interactions. An important factor can be teacher temperament. Observations showing the possible effects of suitability of teacher temperament and child temperament are discussed below.

In the Classroom 1, although, Reactivity and Behavior Management was not correlated, the teacher's perception of teacher-child relationship indicated a relationship between Reactivity and Conflict. Even though the teacher considered her relationship with reactive children more conflictual, observations in the classroom did not show reactive children receiving more behavior management interactions from the teacher. For that reason, we can say that in this classroom, reactive children did not cause more problems than the less reactive children; therefore, the conflict in the relationship was not the result of the children's misbehavior. So, the question can be asked, how can the conflict between the teacher and reactive children be explained? Can the teacher have low tolerance to reactivity? Although, the teacher's personality was not tested in this study, the researcher observed that this teacher was a little bit shy and quiet and also she was overly controlling her reactions. There may not be a goodness of fit between the teacher's temperament and reactive children's temperament. She may not have been able to empathize with these children since she was very different temperamentally from reactive children. Also, reactivity may have been too irritating for her considering her temperament.

Another observation of the researcher related to goodness of fit between the child temperament and teacher temperament, which was not included in the quantitative results since the observation was conveyed during circle time instead of free play, was concerned the teacher in the Classroom 2. This teacher who was outgoing, confident, and extravert seemed to have a problem empathizing with a shy girl during this incidence. During the circle time, when the girl was reciting a poem that she memorized in a very low voice in front of the class, the teacher in a firm manner kept saying to the girl that she had to work on her weak voice. The 5 year old girl blushed and her voice got weaker as the teacher insisted, but the teacher did not seem to understand how her behavior was affecting the girl. The teacher's purpose was to encourage the child to speak louder; instead her attitude made the girl feel more embarrassed and her voice weaker. However, it appeared that the teacher was not able to realize how her attitude was affecting the girl.

Although, this teacher can be considered a very good teacher, she was not able to empathize with a shy girl. Also, she seemed to lack necessary knowledge of how to deal with or encourage a shy child. This observation also shows that teachers' temperament can be a significant factor affecting their relationships with children who have different temperamental characteristics than theirs. On the whole, this teacher compared to other teachers was more confident in the content area, had more interactions with children, and elaborated children's play more. Therefore, she seemed to be successful in many ways. However, she appeared to need training in child temperament.

Future research can look at the effect of the relationship between teacher temperament and child temperament on teacher-child relationships and teacher-child interaction in order to see if some teachers are better at dealing with some temperament characteristics. If this is the case there might be a need to consider whether a teacher's temperament or personality and child temperament are a suitable match while enrolling a child to a classroom. Future research can also include variables such as a teacher's expectations of an ideal child, teacher age, and classroom structural quality. Also, future research can replicate this study with a larger sample size, using more classrooms and combining the data from the classrooms that are not significantly different from each other for analysis.

In sum, the findings of this study suggest that although there are some differences among teachers, teachers are aware of the differences in the temperamental characteristics of preschool children, and that temperamental characteristics are related to the quality of teacher-child relationships and partially to teacher-child interactions. Temperament, thus, may be an important individual difference in preschool children's experiences in a preschool classroom. The findings indicate a need to educate teachers about temperament and how to use this knowledge in their classroom to improve their relationships and interactions with children. Therefore, temperament as a topic should be included as a course in early childhood education programs and curriculum. It may also be useful to include material on temperament in

in-service training courses. Pre-service programs or in-service training may include theoretical knowledge about temperament, and the assessment of the temperament, and its application in the classroom context. Knowledge about temperament can help teachers not only to improve their relationships and interactions with children, but also to create the necessary environments that can modify the temperamental characteristics of the children in their classrooms.

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Table 1. Correlations between Temperament and Teacher Child Relationships -Classroom 1 (n=18)

	Temperament Factors		
STRS Subscales	Task Orientation	Personal/Social Flexibility (Social Adaptability)	Reactivity
Total Score	.548(*)	.474(*)	-.759(**)
Closeness	.729(**)	.402	-.150
Conflict	-.307	-.170	.727(**)
Dependency	-.173	-.581(*)	.419

Table 2. Correlations between Temperament and Teacher Child Relationships - Classroom 2 (n=16)

	Temperament Factors		
STRS Subscales	Task Orientation	Personal/Social Flexibility (Social Adaptability)	Reactivity
Total Score	.241	.084	-.367
Closeness	.492(*)	.096	-.384
Conflict	.111	.080	.332
Dependency	-.064	-.191	-.076

Table 3. Correlations between Temperament and Teacher Child Relationships - Classroom 3 (n=14)

	Temperament Factors		
STRS Subscales	Task Orientation	Personal/Social Flexibility (Social Adaptability)	Reactivity
Total Score	.709(**)	.004	-.706(**)
Closeness	.726(**)	-.322	-.447
Conflict	-.698(**)	-.057	.722(**)
Dependency	.568(*)	-.318	-.236

Table 4. Correlations between Temperament and Teacher Child Relationships - Classroom 4 (n=13)

	Temperament Factors		
STRS Subscales	Task Orientation	Personal/Social Flexibility (Social Adaptability)	Reactivity
Total Score	.740(**)	.011	-.695(**)
Closeness	.349	.480	-.033
Conflict	-.786(**)	.237	.875(**)
Dependency	-.246	.177	.421

Table 5. Correlations between Temperament and Teacher-Child Interactions - Classroom 1 (n= 14)

Temperament Factors	Teachers' Interaction Categories							
	Total Interaction	Teacher Initiated Interaction	Child Initiated Interaction	Behavior Management	Elaborates	Question Open-Ended	Praise	Directives
Task Orientation	-.126	-.069	.194	-.500(*)	.699(**)	-.069	.229	-.215
Social Adaptability	-.310	-.125	-.078	-.505(*)	.564(*)	-.239	.031	-.160
Reactivity	-.070	-.287	.106	.186	-.375	.007	-.338	-.064

Table 6. Correlations between Temperament and Teacher-Child Interactions - Classroom 2 (n= 15)

Temperament Factors	Teachers' Interaction Categories							
	Total Interaction	Teacher Initiated Interaction	Child Initiated Interaction	Behavior Management	Elaborates	Question Open-Ended	Praise	Directives
Task Orientation	-.020	-.190	.148	-.434	.148	-.055	-.043	-.098
Social Adaptability	.440	.345	.376	.411	.283	.527(*)	.407	.454
Reactivity	.186	.511(*)	-.020	.280	-.015	.275	.367	.272

Table 7. Correlations between Temperament and Teacher-Child Interactions - Classroom 3 (n= 13)

Temperament Factors	Teachers' Interaction Categories							
	Total Interaction	Teacher Initiated Interaction	Child Initiated Interaction	Behavior Management	Elaborates	Question Open-Ended	Praise	Directives
Task Orientation	-.137	-.355	.288	-.590(*)	-.052	.107	.181	-.350
Social Adaptability	.279	.171	.119	.466	.119	.171	. 027	.107
Reactivity	.474	.514	.073	.630(*)	.436	.010	-.209	.446

Table 8. Correlations between Temperament and Teacher-Child Interactions - Classroom 4 (n= 12)

Temperament Factors	Teachers' Interaction Categories							
	Total Interaction	Teacher Initiated Interaction	Child Initiated Interaction	Behavior Management	Elaborates	Question Open-Ended	Praise	Directives
Task Orientation	-.531(*)	-.123	-.445	-.783(**)	-.342	-.314	-.444	-.253
Social Adaptability	.243	.052	.537(*)	-.159	.485	.116	.680(*)	.080
Reactivity	.675(*)	.354	.598(*)	.601(*)	.559(*)	.442	.508	.384

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed)